

# REHAB

## DRINKING WATER



IS A SPECIAL DESIGNED  
THERMOPLASTIC COVERED HOSE  
DEVELOPED FOR REHABILITATION  
OF DRINKING WATER MAINS,  
SUCH AS MUNICIPAL PIPE LINES  
WHERE HEAVY TRAFFIC IS LIMITING  
REHAB. WORK, BUT ALSO LONG  
SECTION RURAL PIPE LINES AS  
RIVER CROSSING ETC.

## MANDALS REHAB

**Mandals Rehab** is a special designed thermoplastic covered hose developed for rehabilitation of potable water mains, ranging from 4" (DN100) to 12" (DN300) nominal pipe diameter.

The hose is packed and delivered in a "U-shape", using tape wrapped around it. Prior to installation a regular cleaning procedure is required of the host pipe and condition controlled by CCTV etc. afterwards.

The hose is pulled through the host pipe by using a wire winch e.g., and can be installed in water mains having bends up to at least 30° ( $R/D \geq 5$ ). No steaming is required to inflate the hose afterwards. Just by recoupling and setting the hose under minimum 1 bar pressure, it opens up and expands towards the inner pipe wall.

**Mandals Rehab** (Drinking Water) is a semi-structural, stand-alone hose that will ensure continual water supply even if the host pipe should break. It consists of a thermoplastic polyether based polyurethane (TPU) with excellent wear & tear properties, outstanding hydrolysis resistance and resistance against microbiological attack. Operational pH range is 4-9. The "extrusion through the weave" production method gives excellent bonding between cover and lining as well as firmly encapsulating the circular woven polyester reinforcement

Service Life Time will depend on proper and correct installation into host pipe, as well as concentration of disinfectant chemicals added to the potable water. This should be kept at a minimum. Accelerated aging tests performed by the TPU supplier indicates more than 20 years until 50% Tensile strength reduction at a chlorine dosage in the range 0,05 to 2,5 ppm. (Arrhenius diagram). Please note that this should be regarded as indicative data only.

THE HOSE HAS THE GERMAN KTW (DVGW) CLASS A CERTIFICATION  
FOR PERMANENT DRINKING WATER CONTACT

# TECHNICAL DATA

## MANDALS REHAB - DRINKING WATER

Nominal Pipe Inner Diameter		Hose int Diameter		Wall Thickness		Weight		Burst Pressure (ISO 1402)		Max. Working Pressure (3)		Tensile Strength (4)		Abrasion Resistance (5)	Polymer Adhesion Level to Weave (6)
inch	mm	inch	mm	inch	mm	lbs/ft	kg/m	psi	bar	psi	bar	lbs x 1000	tons	ds	kN/m
3	80	2.83 +0.08	2,0 +2,0	0.12	3,0	0.54	0,8	700	48	275	19	14	6	> 250	> 3
4	100	3.50 +0.10	89,0 +2,5	0.13	3,2	0.94	1,4	650	45	260	18	22	10	> 250	> 3
5	125	4.45 +0.12	113,0 + 3,0	0.13	3,4	1.14	1,7	650	45	260	18	33	15	> 250	> 4
6	150	5.35 +0.12	136,0 +3,0	0.14	3,6	1.34	2,0	650	45	260	18	35	16	> 250	> 5
8	200	7.20 +0.12	183,0 +3,0	0.16	4,0	1.88	2,8	610	42	245	17	66	30	> 250	> 5
10	250	9.00 +0.16	228,0 + 4,0	0.17	4,2	2.75	4,1	520	36	210	14	81	37	> 200	> 5
12	300	10.65 +0.20	271,0 +5,0	0.18	4,6	3.08	4,6	435	30	175	12	98	45	> 15	> 5

### NOTES

- (1) Will depend on Operating Pressure and Hose Diameter
- (2) Depending on Operating Temperature. Contact Fenner Mandals for further advice
- (3) A Safety Factor of 2,5 is applied
- (4) Theoretical calculated Tensile Strength. Efficiency factor of 0,8 is applied
- (5) In-house Test procedure ( Double strokes –ds)
- (6) Test procedure: NS-EN ISO 8033 (increased requirements)

### SECTION LENGTHS WILL DEPEND ON:

- **Hose Dim:** Large dim = > Shorter lengths. Secondly, higher friction and drum space
- **Number of bends:** More bend => Higher friction => Higher traction
- **Bend angle and R/D ratio:** Sharp bends => Higher friction and greater risk of damage to the hose during retraction.  
Can be dampened with good lubrication (silicone oil / cooking oil etc) on hose. High R/D ratio means less curvature and facilitates retraction, but also less "buckling" or folding of the hose at the smallest curvature radius



**Contact**  
sales@mandals.com  
(47) 38 27 24 00  
Nordre Banegate 26, 4515 Mandal, Norway

**mandals**  
SINCE 1775

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